EPA's EMAP Probability Monitoring Approach: More Than Just 305(b)?

Michael E. McDonald

EMAP Director, Office of Research and Development, US EPA, MD- B205-01 NHEERL, Research Triangle Park, NC 27711, mcdonald.michael@epa.gov

Biographical Sketch of Author

Dr. Michael McDonald has a B.S. in Environmental Engineering and in Oceanography from the University of Michigan, an M.S. in Zoology from North Carolina State University, and a Ph.D. in Civil Engineering and Zoology from North Carolina State University. He has been with EPA as EMAP Director for 5 years. Prior to that, he was Director of the University of Minnesota Sea Grant Program and a Professor of Chemical Engineering. His research background is in simulation modeling, water and wastewater treatment, environmental and aquacultural engineering, toxic and hazardous waste management, and aquatic ecology.

Abstract

The Office of Research and Development's Environmental Monitoring and Assessment Program (EMAP) has been developing probabilistic monitoring frameworks for aquatic resources (streams, rivers, lakes, estuaries) to provide states with a more effective approach to assessing the condition of all their waters for Clean Water Act (CWA) 305(b) reporting. The EMAP approach uses biological assessment methods and randomized designs to generate cost-effective, comparable assessments of aquatic life use at local, state, and national scales. EMAP has been transferring this monitoring science and technology to our state and tribal partners through our regional and national demonstration projects. Current, large-scale EMAP demonstrations include: the National Coastal Assessment, Western EMAP streams, and the Great Rivers of the Central Basin. As more states are exposed to and adopt this approach, there is a need to incorporate information from probability monitoring for 305(b) into a more comprehensive, integrated monitoring program envisioned by EPA's Office of Water. EMAP has begun research on several aspects of such an integrated monitoring approach. We have established a research framework for this integration and have begun work to fill extant research gaps. As part of this, we have developed preliminary approaches for the use of probabilistic monitoring data to help develop thresholds of biological impairment for use with non-point source pollutants, and the development of probability of impairment models for more effective targeted monitoring in determining sites for CWA 303(d) listings.

* * * * *